

CLAIMS:

1. A method of making mountable devices comprising the steps of:

(a) assembling

(i) at least a portion of a wafer having a main surface and a multiplicity of spaced-apart caps projecting upwardly from said main surface and having channels between said caps with

(ii) a terminal-bearing element incorporating an array of terminals

so as to mount terminals simultaneously on a plurality of said caps; and

(b) electrically connecting the terminals mounted on said caps to the wafer by means of leads extending to contacts on the wafer disposed in said channels.

2. A method as claimed in claim 1 wherein said terminal-bearing element also includes said leads, said step of electrically connecting including bonding said leads to said contacts.

3. A method as claimed in claim 2 wherein said assembling step is performed so as to position said leads at least partially in alignment with said channels.

4. A method as claimed in claim 3 wherein, after said assembling step, said leads extend at a level above said contacts, and wherein said bonding step includes bending said leads downwardly into engagement with said contacts.

5. A method as claimed in claim 3 wherein said leads are elongated and said assembling step is performed so that at least some of the leads are aligned with channels extending co-directionally with such leads.

6. A method as claimed in claim 3 wherein said channels include wide channels and narrow channels, said contacts being disposed in said wide channels, said assembling step being performed so as to align said leads with said wide channels.

7. A method as claimed in claim 2 further comprising the step of severing the wafer in said channels so as to form a plurality of units, each said unit including at least one of said caps, at least one of said terminals and at least one said contact.

8. A method as claimed in claim 7 wherein said terminal-bearing element includes a dielectric layer, said terminals and said leads being supported by said dielectric element prior to said assembling step.

9. A method as claimed in claim 7 wherein said terminal-bearing element includes a lead frame incorporating said leads and said terminals.

10. A method as claimed in claim 7 wherein said terminal-bearing element has at least some of said terminals electrically connected to one another prior to said assembling step, said severing step being performed so as to sever at least some connections between said terminals.

11. A method as claimed in claim 1 wherein said wafer includes a plurality of acoustically-active devices, said caps covering said acoustically-active devices.

12. A method as claimed in claim 1 wherein said wafer includes a plurality of MEMS devices, said caps covering said MEMS devices.

13. A method of making electronic devices comprising the steps of:

(a) assembling

(i) at least a portion of a wafer having a main surface, structure defining an upper surface above said main surface, depressions extending into the wafer from the upper surface and contacts in said depressions, and

(ii) a terminal-bearing element incorporating an array of terminals

so as to mount a plurality of terminals simultaneously on the upper surface; and

(b) electrically connecting the terminals mounted on the upper surface to the wafer by means of leads extending to the contacts disposed in said depressions.

14. A method as claimed in claim 13 wherein said terminal-bearing element also includes said leads, said step of electrically connecting including bonding said leads to said contacts.

15. A method as claimed in claim 14 wherein said assembling step is performed so as to position said leads at least partially in alignment with said depressions.

16. A method as claimed in claim 15 wherein, after said assembling step, said leads extend at a level above said contacts, and wherein said bonding step includes bending said leads downwardly into engagement with said contacts.

17. A method as claimed in claim 15 further comprising the step of severing the wafer so as to form a plurality of units.

18. A method as claimed in claim 17 wherein said terminal-bearing element includes a dielectric layer, said terminals and said leads being supported by said dielectric element prior to said assembling step.

19. A method as claimed in claim 17 wherein said terminal-bearing element includes a lead frame incorporating said leads and said terminals.

20. A method as claimed in claim 17 wherein said terminal-bearing element has at least some of said terminals electrically connected to one another prior to said assembling step, said severing step being performed so as to sever at least some connections between said terminals.

21. A method as claimed in claim 13 wherein said structure defining said upper surface includes a plurality of spaced-apart caps defining said depressions as channels extending between said caps.

22. An in-process element comprising:

(a) a wafer with a main surface, structure defining an upper surface above said main surface and depressions extending downwardly from said upper surface toward said main surface, the wafer also having contacts in said depressions;

(b) a terminal-bearing element having a plurality of electrically-conductive terminals overlying said upper surface and secured thereto; and

(c) a plurality of leads extending into said depressions and connecting said terminals to said contacts.

23. An element as claimed in claim 22 wherein said structure defining said upper surface includes a plurality of spaced-apart caps and said depressions include channels between said caps.

24. A microelectronic device comprising:

(a) a main body having an active region and contacts;

(b) a cap bonded to said main body, said cap covering said active region and defining an upper surface;

(c) terminals mounted to said upper surface of said cap;

(d) leads extending downwardly from said terminals to said contacts; and

(e) an encapsulant surrounding said leads and covering said contacts.

25. A device as claimed in claim 24 wherein said cap has edges extending from said upper surface to said main body, said leads being spaced apart from said edges of said cap.

26. A device as claimed in claim 25 wherein said leads are formed integrally with said terminals.

27. A device as claimed in claim 24 wherein said active region is acoustically active.

28. A microelectronic device comprising:

(a) a main body having an active region and contacts;

(b) a cap bonded to said main body, said cap covering said active region and defining an upper surface;

(c) a dielectric layer overlying said upper surface of said cap;

(d) terminals on said dielectric layer for connecting the device to an external circuit; and

(e) leads extending downwardly from said terminals to said contacts.

29. A device as claimed in claim 28 further comprising an encapsulant surrounding said leads and covering said contacts.

30. A device as claimed in claim 28 wherein said dielectric layer is adhesively bonded to said cap.

31. A SAW device assembly comprising:

(a) a main body having an acoustically-active region and contacts;

(b) a cap bonded to said main body, said cap covering said active region and defining an upper surface;

(c) terminals mounted on said upper surface of said cap and electrically connected to said contacts; and

(d) a circuit panel having contact pads thereon, said main body and cap overlying said circuit panel with said upper surface of said cap and said terminals facing toward said circuit panel, said terminals being bonded to said contact pads.

32. A MEMS device assembly comprising:

(a) a main body having an active region with micromechanical elements and contacts;

(b) a cap bonded to said main body, said cap covering said active region and defining an upper surface;

(c) terminals mounted on said upper surface of said cap and electrically connected to said contacts; and

(d) a circuit panel having contact pads thereon, said main body and cap overlying said circuit panel with said

upper surface of said cap and said terminals facing toward said circuit panel, said terminals being bonded to said contact pads.